Quality Control Report For

Bituminous Macadam

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/002 **Date:29.04.2018**

TEST REPORT

Client	:	**Executive Engineer,** **Byatarayanapura Division, BBMP.**
Name of the work	:	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Source of Sample	:	Hot Mix Plant
Date of Testing	:	28.04.2018

The results of the tests conducted on the **Bitumen VG-30** sample using for Bituminous Macadam collected from the contractor's plant are as follows:

Sl.No	Description	Test Result	Requirement as per IS:73:2013 for Paving Bitumen
1	Penetration at 25^{0}c, 1/10 mm,100g.5s	56	Min, 45
2	Softening point, ^{0}c	50	Min. 47
3	Flash Point, ^{0}c	245	Min. 220
4	Ductility at 25^{0}c, cm Min	100	40

⇒ *The results indicated above are based on the tests carried out on the samples received in the laboratory.*

⇒ *Any Query regarding the report must be reported immediately.*

RBI -Technical Services

Asstplly. N.D
Assistant Engineer
AE(M)

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

For RBI-TECHNICAL SERVICES

Proprietor

G.N. Reddy

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2017-18/002

Date:29.04.2018

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**28.04.2018**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	2450	10.8	w_6	170	32.4	x_6	165
16	12.5	W_7	1650	8.55	w_7	150	25.5	x_7	105
12.5	10	W_8	950	6.75	w_8	100	20.2	x_8	105
10	6.3	W_9	140	4.89	w_9	10	14.7	x_9	10

Flakiness Index 8.29%

Elongation Index 7.42%

Combined Flakiness & Elongation Index 15.70%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Macadam is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/002 Date:29.04.2018

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**28.04.2018**

Total Weight of Sample: **5000**

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
26.5	0	0	0	100	100	Bituminous Macadam Grade-II specification as per MORTH
19	485	9.70	9.70	90.30	90 - 100	
13.2	1650	33.00	42.70	57.30	56 - 88	
4.75	1270	25.40	68.10	31.90	16 - 36	
2.36	755	15.10	83.20	16.80	4-19	
0.3	535	10.70	93.90	6.10	2-10	
0.075	200	4.00	97.90	2.10	0-8	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.,
Bangalore.

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RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 : 2015 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/001 Date:29.04.2018

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**28.04.2018**

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	383	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	85.6	85.7	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.5	296.9	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	22.29	22.38	
				22.33

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division.
Yelahanka Zone, B.B.M.P.,
Bangalore.

for RBI-TECHNICAL SERVICES

Proprietor

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Quality Control Report For

Bituminous Concrete

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

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NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/001 **Date:30.04.2018**

TEST REPORT

Client	:	**Executive Engineer,** **Byatarayanapura Division, BBMP.**
Name of the work	:	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Source of Sample	:	Hot Mix plant
Date of Testing	:	29.04.2018

The results of the tests conducted on the **CRMB 55** sample using for Bituminous Concrete collected from the contractor's plant are as follows:

Sl.No	Description	Test Result	Requirement as per IS:15462:2004 for CRMB 55
1	Penetration at 25^{0}c, 1/10 mm,100g.5s	53	< 60
2	Softening point, ^{0}c	57	Min. 55
3	Flash Point, ^{0}c	235	Min. 220

⇒ *The results indicated above are based on the tests carried out on the samples received in the laboratory.*

⇒ *Any Query regarding the report must be reported immediately.*

RBI -Technical Services

RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2017-18/002

Date:30.04.2018

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**29.04.2018**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	2450	10.8	w_6	197	32.4	x_6	187
16	12.5	W_7	1785	8.55	w_7	135	25.5	x_7	157
12.5	10	W_8	1150	6.75	w_8	184	20.2	x_8	100
10	6.3	W_9	205	4.89	w_9	18	14.7	x_9	27

Flakiness Index 9.55%

Elongation Index 8.43%

Combined Flakiness & Elongation Index 17.98%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer
AE (HQ)

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

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ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/002 Date:30.04.2018

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**29.04.2018**

Total Weight of Sample: **5000** gms

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grading-II specification as per MORTH
13.2	380	7.60	7.60	92.40	79 - 100	
9.5	575	11.50	19.10	80.90	70 - 88	
4.75	800	16.00	35.10	64.90	53 - 71	
2.36	615	12.30	47.40	52.60	42 - 58	
1.18	525	10.50	57.90	42.10	34 - 48	
0.600	335	6.70	64.60	35.40	26 - 38	
0.300	585	11.70	76.30	23.70	18 - 28	
0.150	475	9.50	85.80	14.20	12 - 20	
0.075	370	7.40	93.20	6.80	4 - 10	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
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RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/002 Date:30.04.2018

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**29.04.2018**

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	381	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	83.5	84.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.5	295.8	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	21.92	22.18	
				22.05

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer
AE(KZ)

Assistant Executive Engineer

Assistant Executive Engineer.
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

Quality Control Report For

Wet Mix Macadam

RBI - Technical Services

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/003 **Date:15.04.2018**

RBI-TECHNICAL SERVICES Quality Certified Bangalore

RBI- Technical Services

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-13

Client	:	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	:	Reasphalting to Roads behind Rajamurali Theatre in ward no 8, Kodigehalli.
Source of Sample	:	Hot Mix Plant
Date of Sample Testing	:	**14.04.2018 to 15.04.2018**
Material	:	**WMM**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	22.00%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).

2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

R.N. Reddy

Assistant Executive Engineer

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Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2017-18/003

Date:16.04.2018

Aggregate Shape Test
IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Reasphalting to Roads behind Rajamurali Theatre in ward no 8. Kodigehalli.
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**15.04.2018**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	2450	13.5	w_5	165	40.5	x_5	155
20	16	W_6	1845	10.8	w_6	150	32.4	x_6	125
16	12.5	W_7	1050	8.55	w_7	115	25.5	x_7	115
12.5	10	W_8	850	6.75	w_8	100	20.2	x_8	90
10	6.3	W_9	100	4.89	w_9	15	14.7	x_9	15

Flakiness Index 8.66%

Elongation Index 7.94%

Combined Flakiness & Elongation Index 16.60%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

G.N. Ramesh

Assistant Executive Engineer
Assistant Executive Engineer.
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/001 **Date:16.04.2018**

RBI- Technical Services

GRADATION FOR WMM

MORTH TABLE-400-11

Name of the Work	**Reasphalting to Roads behind Rajamurali Theatre in ward no 8, Kodigehalli.**
Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Source of Sample	**Hot Mix Plant**
Date of Testing	**15.04.2018**
Material	**Wet Mix Macadam**

Oven dry Wt.(gms) **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	455	4.55	4.55	95.45	95-100
22.4	3150	31.5	36.1	64.0	60-80
11.2	1795	17.95	54.0	46.0	40-60
4.75	1545	15.45	69.5	30.6	25-40
2.36	1265	12.65	82.1	17.9	15-30
0.600	795	8.0	90.1	9.9	8-22
0.075	650	6.5	96.6	3.4	0-8

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

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ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/003 Date:16.04.2018

RBI- Technical Services

AGGREGATE IMPACT VALUE

(IS : 2386 Part - 4)

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	**Reasphalting to Roads behind Rajamurali Theatre in ward no 8, Kodigehalli.**
Source of Sample	**Hot Mix Plant**
Date of Testing	**15.04.2018**
Material	**Wet Mix Macadam**

Description		Trails		
		1	2	3
Wt.Of stone pieces(dry) passing IS Sieve 12.5mm but retained in IS Sieve 10mm(gm)	(Wa)	322.0	323.0	323.0
Wt.Of the fraction retained in IS Sieve 2.36mm after the impact test(gm)	(Wb)	263.5	263.1	263.4
Wt.Of the fraction Passed in IS Sieve 2.36mm after the impact test(gm)	(Wc)	58.50	58.90	58.70
Aggregate Impact value (%)	(Wc/Wa)100	18.2	18.2	18.2
Average Aggregate Impact value (%)		**18.2**		
Specified Aggregate Impact value (%)		**30.0**		

RBI -Technical Services (CONSULTANT)

For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

G.N. Ramesh

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Quality Control Report For

Bituminous Concrete

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/001 **Date: 25.04.2018**

RBI-TECHNICAL SERVICES Quality Certified Bangalore

TEST REPORT

Client	:	**Executive Engineer,** **Byatarayanapura Division, BBMP.**
Name of the work	:	Reasphalting to Roads behind Rajamurali Theatre in ward no 8, Kodigehalli.
Source of Sample	:	Hot Mix plant
Date of Testing	:	24.04.2018

The results of the tests conducted on the **CRMB 55** sample using for Bituminous Concrete collected from the contractor's plant are as follows:

Sl.No	Description	Test Result	Requirement as per IS:15462:2004 for CRMB 55
1	Penetration at 25^0c, 1/10 mm,100g.5s	53	< 60
2	Softening point, ^{0}c	58	Min. 55
3	Flash Point, ^{0}c	235	Min. 220

⇒ *The results indicated above are based on the tests carried out on the samples received in the laboratory.*

⇒ *Any Query regarding the report must be reported immediately.*

RBI -Technical Services

Assistant Engineer

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.
Bangalore

For RBI-TECHNICAL SERVICES

Proprietor

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RBI - Technical Services

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/003 Date:25.04.2018

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Reasphalting to Roads behind Rajamurali Theatre in ward no 8, Kodigehalli.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**24.04.2018**

Total Weight of Sample: **5000** gms

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grading-II specification as per MORTH
13.2	390	7.80	7.80	92.20	79 - 100	
9.5	575	11.50	19.30	80.70	70 - 88	
4.75	825	16.50	35.80	64.20	53 - 71	
2.36	615	12.30	48.10	51.90	42 - 58	
1.18	525	10.50	58.60	41.40	34 - 48	
0.600	340	6.80	65.40	34.60	26 - 38	
0.300	570	11.40	76.80	23.20	18 - 28	
0.150	460	9.20	86.00	14.00	12 - 20	
0.075	370	7.40	93.40	6.60	4 - 10	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

Assistant Engineer

RBI -Technical Services
(CONSULTANT)

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

G. N. Revele

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2017-18/001

Date:25.04.2018

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Reasphalting to Roads behind Rajamurali Theatre in ward no 8, Kodigehalli.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**24.04.2018**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	2450	10.8	w_6	197	32.4	x_6	187
16	12.5	W_7	1750	8.55	w_7	135	25.5	x_7	157
12.5	10	W_8	1150	6.75	w_8	184	20.2	x_8	100
10	6.3	W_9	185	4.89	w_9	18	14.7	x_9	27

Flakiness Index 9.65%

Elongation Index 8.51%

Combined Flakiness & Elongation Index 18.16%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI - Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/003 Date:25.04.2018

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Reasphalting to Roads behind Rajamurali Theatre in ward no 8, Kodigehalli.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**24.04.2018**

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	381	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	83.9	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	295.5	
4	Aggregate Impact value = percent fines	22.02	22.31	
	100* (W_2/W_1) percent			**22.17**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer.
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.
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G.N. Reddy

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Quality Control Report For

Bituminous Macadam

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 : 2015 Certified

Job No:RBITS/MT/BBMP-BD/Package-02/2017-18/001 Date:23.04.2018

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements and asphalting to road connecting Hoysala Apartments-Amco Layout Tatanagara.
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**22.04.2018**

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	384	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	86	86.2	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.5	296.9	
4	Aggregate Impact value = percent fines	22.40	22.45	
	100* (W_2/W_1) percent			**22.42**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

for RBI-TECHNICAL SERVICES

Proprietor

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RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/002 Date:23.04.2018

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements and asphalting to road connecting Hoysala Apartments-Amco Layout Tatanagara.
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**22.04.2018**

Total Weight of Sample: **5000**

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
26.5	0	0	0	100	100	Bituminous Macadam Grade-II specification as per MORTH
19	490	9.80	9.80	90.20	90 - 100	
13.2	1655	33.10	42.90	57.10	56 - 88	
4.75	1285	25.70	68.60	31.40	16 - 36	
2.36	765	15.30	83.90	16.10	4-19	
0.3	525	10.50	94.40	5.60	2-10	
0.075	185	3.70	98.10	1.90	0-8	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

G.N. Ramesh

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857
Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2017-18/002

Date:23.04.2018

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements and asphalting to road connecting Hoysala Apartments-Amco Layout Tatanagara.
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**22.04.2018**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	2350	10.8	w_6	170	32.4	x_6	165
16	12.5	W_7	1750	8.55	w_7	150	25.5	x_7	105
12.5	10	W_8	955	6.75	w_8	100	20.2	x_8	105
10	6.3	W_9	125	4.89	w_9	10	14.7	x_9	10

Flakiness Index 8.30%

Elongation Index 7.43%

Combined Flakiness & Elongation Index 15.73%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Macadam is 30%

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P..
Bangalore.

Quality Control Report For

Bituminous Concrete

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/004 **Date: 24.04.2018**

TEST REPORT

Client	:	**Executive Engineer,** **Byatarayanapura Division, BBMP.**
Name of the work	:	Improvements and asphalting to road connecting Hoysala Apartments-Amco Layout Tatanagara.
Source of Sample	:	Hot Mix plant
Date of Testing	:	23.04.2018

The results of the tests conducted on the **CRMB 55** sample using for Bituminous Concrete collected from the contractor's plant are as follows:

Sl.No	Description	Test Result	Requirement as per IS:15462:2004 for CRMB 55
1	Penetration at 25^0c, 1/10 mm,100g.5s	55	< 60
2	Softening point, ^{0}c	55	Min. 55
3	Flash Point, ^{0}c	245	Min. 220

⇒ *The results indicated above are based on the tests carried out on the samples received in the laboratory.*

⇒ *Any Query regarding the report must be reported immediately.*

RBI -Technical Services Assistant Engineer Assistant Executive Engineer

For RBI-TECHNICAL SERVICES

Proprietor

Assistant Executive Engineer,
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.,
Bangalore.

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RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/003 Date:24.04.2018

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements and asphalting to road connecting Hoysala Apartments-Amco Layout Tatanagara.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**23.04.2018**

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	381	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	82.8	84.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.8	295.6	
4	Aggregate Impact value = percent fines	21.73	22.18	**21.96**
	100* (W_2/W_1) percent			

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer.
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2017-18/004

Date:24.04.2018

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements and asphalting to road connecting Hoysala Apartments-Amco Layout Tatanagara.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**23.04.2018**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	2345	10.8	w_6	197	32.4	x_6	187
16	12.5	W_7	1850	8.55	w_7	135	25.5	x_7	157
12.5	10	W_8	1250	6.75	w_8	184	20.2	x_8	100
10	6.3	W_9	175	4.89	w_9	18	14.7	x_9	27

Flakiness Index 9.50%

Elongation Index 8.38%

Combined Flakiness & Elongation Index 17.88%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2017-18/004 Date:24.04.2018

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Improvements and asphalting to road connecting Hoysala Apartments-Amco Layout Tatanagara.
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**23.04.2018**

Total Weight of Sample: **5000** gms

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grading-II specification as per MORTH
13.2	385	7.70	7.70	92.30	79 - 100	
9.5	585	11.70	19.40	80.60	70 - 88	
4.75	812	16.24	35.64	64.36	53 - 71	
2.36	625	12.50	48.14	51.86	42 - 58	
1.18	535	10.70	58.84	41.16	34 - 48	
0.600	345	6.90	65.74	34.26	26 - 38	
0.300	595	11.90	77.64	22.36	18 - 28	
0.150	475	9.50	87.14	12.86	12 - 20	
0.075	380	7.60	94.74	5.26	4 - 10	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

For RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

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